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(54) Title: METHOD AND APPARATUS FOR IMPROVING ASYNCHRONOUS TRANSFER MODE OPERATION OVER NOISY, HIGH SPEED WIRELESS LINKS

## (57) Abstract

In an asynchronous transfer mode (ATM) system, an apparatus is used to improve the transmission and reception of encoded ATM information over a wireless link having an encoder for encoding the information, assembling the information into a frame format and interleaving of the information for transmission over the wireless link. In addition, the apparatus also has a decoder for decoding information received via the wireless link which was encoded by a similar apparatus transmitting the information over the wireless link. Further, methods utilized by the encoder and decoder to improve transmission include increasing the bandwidth efficiency by dropping a header byte from every ATM cell; assembling separate header and payload frames; utilizing and rearranging idle/unassigned cells in the payload frame for storing and, thereby, increasing error correction code in the frame; dynamically changing the coding of frame in real time from one payload frame to optimize utilization of the mumber of available idle/unassigned cells occurring in each frame; restoring the positions of all idle/unassigned cells to their original position at a receiving end in order to leave the Cell Delay Variation unaffected; interleaving the frames to reduce burst errors during transmission; preservation of overhead parity bits present in the original frames received from a wireline link; cell Header error detection and correction through the use of a generated syndrome; and a synchronization pattern detection method during decoding.